

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

- 1 1. (Currently amended) A method for invalidating ~~a resource record~~
2 resource records in a local cache at a client computer system within a network,
3 comprising:
4 ~~retrieving the resource record from the local cache at the client computer~~
5 ~~system;~~
6 ~~— issuing one or more queries for the resource record at the client computer~~
7 ~~system;~~
8 ~~waiting for a response to the query at the client computer system; and~~
9 ~~if the response to the query is not received in a pre-determined amount of~~
10 ~~time and after issuing a predetermined number of queries for the resource record,~~
11 ~~invalidating the resource record at the client computer system;~~
12 ~~the method further comprising:~~
13 receiving a multicast message from a second client querying a ~~second~~
14 device;
15 locating a ~~second~~-resource record associated with the ~~second~~-device;
16 waiting for a multicast response from the ~~second~~-device to the multicast
17 query; and
18 when a predetermined number of multicast messages from the second
19 client querying the ~~second~~-device have been received without receiving a
20 multicast response from the ~~second~~-device to the second client, invalidating the
21 ~~second~~-resource record associated with the device.

1 2-4 (Canceled).

1 5. (Currently amended) The method of ~~claim 1~~claim 41, wherein if
2 the response to the issued query is not received in a pre-determined amount of
3 time, the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 waiting for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, invalidating the parent record, and then repeating the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 6. (Currently amended) The method of ~~claim 1~~claim 41, wherein if
2 the response to the issued query is not received in a pre-determined amount of
3 time, the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 receiving a response to the query from the device, wherein the response
8 includes information for updating the resource record; and
9 updating the resource record with the information received in the
10 response.

1 7. (Original) The method of claim 6, wherein the method further
2 comprises updating the parent record with the information received in the
3 response.

1 8. (Currently amended) The method of ~~claim 1~~claim 41, wherein the
2 ~~method is invoked~~ resource records are retrieved and the queries are issued at a
3 pre-specified time interval.

1 9. (Currently amended) A computer-readable storage medium storing
2 instructions that when executed by a computer cause the computer to perform a
3 method for invalidating ~~a resource record~~ resource records in a local cache at a
4 client computer system within a network, the method comprising:
5 ~~retrieving the resource record from the local cache at the client;~~
6 ~~———issuing one or more queries for the resource record;~~
7 ~~waiting for a response to the query; and~~
8 ~~if the response to the query is not received in a pre-determined amount of~~
9 ~~time and after issuing a predetermined number of queries for the resource record,~~
10 ~~invalidating the resource record at the client;~~
11 ~~the method further comprising:~~
12 receiving a multicast message from a second client querying a ~~second~~
13 device;
14 locating a ~~second~~-resource record associated with the ~~second~~-device;
15 waiting for a multicast response to the multicast query; and
16 when a predetermined number of multicast messages from the second
17 client querying the ~~second~~-device have been received without receiving a
18 multicasted response from the ~~second~~-device to the second client, invalidating the
19 ~~second~~-resource record associated with the device.

1 10-12 (Canceled).

1 13. (Currently amended) The computer-readable storage medium of
2 ~~claim 9~~claim 42, wherein if the response to the issued query is not received in a
3 pre-determined amount of time, the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 waiting for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, invalidating the parent record, and then repeating the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 14. (Currently amended) The computer-readable storage medium of
2 ~~claim 9~~claim 42, wherein if the response to the issued query is not received in a
3 pre-determined amount of time, the method further comprises:
4 retrieving a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issuing a query for the parent record;
7 receiving a response to the query from the device, wherein the response
8 includes information for updating the resource record; and
9 updating the resource record with the information received in the
10 response.

1 15. (Original) The computer-readable storage medium of claim 14,
2 wherein the method further comprises updating the parent record with the
3 information received in the response.

1 16. (Currently amended) The computer-readable storage medium of
2 ~~claim 9~~claim 42, wherein the ~~method is invoked~~ resource records are retrieved
3 and the queries are issued at a pre-specified time interval.

1 17. (Currently amended) An apparatus that invalidates ~~a resource~~
2 ~~record~~resource records in a local cache at a client computer system within a
3 network, comprising:
4 ~~a retrieval mechanism at the client configured to retrieve the resource~~
5 ~~record from the local cache at the client; and~~
6 ~~—— an invalidation mechanism configured to;~~
7 ~~issue one or more queries for the resource record;~~
8 ~~wait for a response to the query; and~~
9 ~~if the response to the query is not received in a pre-determined~~
10 ~~amount of time and after issuing a predetermined number of queries for~~
11 ~~the resource record, to invalidate the resource record at the client; and~~
12 ~~the invalidation mechanism further configured to:~~
13 an invalidation mechanism configured to:
14 receive a multicast message from a second client querying a
15 ~~second~~ device;
16 receive a ~~second~~ resource record associated with the ~~second~~ device
17 from the retrieval mechanism in response to receiving the multicast
18 message;
19 wait for a multicast response to the multicast query; and
20 when a predetermined number of multicast messages from the
21 second client querying the ~~second~~ device have been received without
22 receiving a multicasted response from the ~~second~~ device to the second
23 client, ~~invalidating~~ invalidate the second resource record associated with
24 the device.

1 18-20 (Canceled).

1 21. (Currently amended) The apparatus of ~~claim 17~~claim 43, wherein
2 if the response to the issued query is not received in a pre-determined amount of
3 time, the invalidation mechanism is additionally configured to:
4 retrieve a parent record of the resource record at the client, wherein the
5 parent record refers to the resource record;
6 issue a query for the parent record;
7 wait for a response to the query from the device; and
8 if the response to the query is not received in a pre-determined amount of
9 time, to invalidate the parent record, and to then repeat the above process by
10 applying it recursively to any records that refer to the now-invalidated parent
11 record.

1 22. (Currently amended) The apparatus of ~~claim 17~~claim 43, further
2 comprising an updating mechanism, wherein if the response to the issued query is
3 not received in a pre-determined amount of time, the updating mechanism is
4 configured to:
5 retrieve a parent record of the resource record at the client, wherein the
6 parent record refers to the resource record;
7 issue a query for the parent record;
8 receive a response to the query from the device, wherein the response
9 includes information for updating the resource record; and to
10 update the resource record with the information received in the response.

1 23. (Original) The apparatus of claim 22, wherein the updating
2 mechanism is additionally configured to update the parent record with the
3 information received in the response.

1 24. (Currently amended) The apparatus of ~~claim 17~~claim 43, wherein
2 the ~~apparatus is invoked~~ invalidation mechanism is configured to retrieve
3 resource records and issue queries at a pre-specified time interval.

1 25–34 (Canceled).

1 35. (Previously Presented) The method of claim 1 wherein invalidating
2 the resource record further comprises invalidating a child resource record of the
3 resource record.

1 36. (Previously Presented) The computer-readable storage medium of
2 claim 9, wherein invalidating the resource record further comprises invalidating a
3 child resource record of the resource record.

1 37. (Previously Presented) The apparatus of claim 17, wherein
2 invalidating the resource record further comprises invalidating a child resource
3 record of the resource record.

1 38-39 (Canceled).

1 40. (Previously presented) A method for validating a resource record
2 in a local cache at a client computer system, comprising:
3 receiving a request to use a service;
4 looking up a service record for the service in a cache;
5 looking up an address record referenced by the service record and using a
6 host address and a port number in the address record to send a query to the service
7 on the network;
8 if the service responds within a predetermined time, using the service;

9 if the service does not respond within the predetermined time, resending
10 the query to the service until the service responds, at which time the service is
11 used, or until a predetermined number of queries has been sent;
12 upon sending the predetermined number of queries without receiving a
13 response, marking the address record referenced by the service record as suspect,
14 and querying for a new address record for the service by:
15 sending a multicast query requesting the address record on the
16 network and waiting a predetermined time for a response;
17 if the service responds, updating address record with address
18 information included in the response;
19 if the service does not respond after a predetermined time and after
20 resending the query a predetermined number times:
21 deleting the address record.
22 marking the service record as suspect; and
23 sending a multicast query for the service record on the
24 network and waiting for a response;
25 if a response is received, updating the cache and using the
26 service;
27 otherwise, if no response is received, deleting the service
28 record from the cache.

1 41. (New) The method of claim 1, wherein the method further
2 comprises:
3 retrieving a resource record from the local cache at the client computer
4 system;
5 issuing one or more queries for the resource record at the client computer
6 system;
7 waiting for a response to the query at the client computer system; and

8 if the response to the query is not received in a pre-determined amount of
9 time and after issuing a predetermined number of queries for the resource record,
10 invalidating the resource record at the client computer system

1 42. (New) The computer-readable storage medium of claim 9, wherein
2 the method further comprises:

3 retrieving a resource record from the local cache at the client;

4 issuing one or more queries for the resource record;

5 waiting for a response to the query; and

6 if the response to the query is not received in a pre-determined amount of
7 time and after issuing a predetermined number of queries for the resource record,
8 invalidating the resource record at the client.

1 43. (New) The apparatus of claim 17, wherein the apparatus further
2 comprises:

3 a retrieval mechanism at the client configured to retrieve a resource record
4 from the local cache at the client, wherein the invalidation mechanism is
5 configured to:

6 issue one or more queries for the resource record,

7 wait for a response to the query, and

8 if the response to the query is not received in a pre-determined
9 amount of time and after issuing a predetermined number of queries for
10 the resource record, invalidate the resource record at the client.